

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: John D. TENEYCK                      Docket No.: UNF-9071 A  
Serial No: not assigned yet                      Examiner: not assigned yet  
Filed: May 14, 2001                      Group Art Unit: not assigned yet  
Title: AMORPHOUS NON-INTUMESCENT INORGANIC FIBER MAT FOR  
LOW TEMPERATURE EXHAUST GAS TREATMENT DEVICES

**BOX PATENT APPLICATION  
COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231**

**PRELIMINARY AMENDMENT**

Dear Sir:

Applicant respectfully requests that the following amendment be entered prior to examination of the continuation application filed herewith and before the calculation of the filing fee.

**IN THE SPECIFICATION**

Page 1, line 5: After the title of the invention, please insert the following paragraph:

**CROSS REFERENCE TO RELATED APPLICATIONS**

The present application is a continuation of United States Serial No. 09/456,937, filed December 7, 1999, which claims priority under 35 U.S.C. §119(e) from United States Provisional Application No. 60/111,353, filed December 8, 1998.

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Laura A. Rafn  
(type or print name of person signing paper)

Laura A. Rafn  
(signature of person mailing paper)

5-14-01  
(date)

## IN THE CLAIMS

Please cancel claims 1-36 without prejudice or disclaimer, and before the calculation of the filing fee for the present application.

Please add new claims 37-78 as follows:

37. (new) A non-intumescent mat for providing support for a fragile structure in a low temperature exhaust gas treatment device comprising up to about 1260°C temperature resistant, amorphous, inorganic fibers, said fibers having a Young's Modulus of less than about  $20 \times 10^6$  psi, said mat optionally including a binder, wherein the mat is adapted to provide a holding force of at least 15 psi throughout an average mat temperature range from ambient temperature up to at least about 350°C, and wherein the temperature resistant, amorphous, inorganic fibers are not post processed by heat treating to either anneal or crystallize the fiber.

38. (new) The non-intumescent mat of claim 37, wherein the temperature resistant, amorphous, inorganic fibers have a geometric mean diameter from about 1  $\mu\text{m}$  to about 10  $\mu\text{m}$ .

39. (new) The non-intumescent mat of claim 38, wherein the temperature resistant, amorphous, inorganic fibers have a geometric mean diameter less than about 5  $\mu\text{m}$ .

40. (new) The mat of claim 37, wherein the temperature resistant, amorphous, inorganic fiber is at least one of an amorphous alumina/silica fiber, an alumina/silica/magnesia fiber, mineral wool, E-glass fiber, magnesia-silica fiber, and calcia-magnesia-silica fiber.

41. (new) The mat of claim 40, wherein the alumina/silica fiber comprises the fiberization product of a melt having from about 45% to about 60%  $\text{Al}_2\text{O}_3$  and about 40% to about 55%  $\text{SiO}_2$ .

42. (new) The mat of claim 40, wherein the alumina/silica fiber comprises the fiberization product of a melt having about 50%  $\text{Al}_2\text{O}_3$  and about 50%  $\text{SiO}_2$ .

43. (new) The mat of claim 37, wherein the temperature resistant, amorphous, inorganic fiber is E glass.

44. (new) The mat of claim 37, wherein the temperature resistant, amorphous, inorganic fiber is magnesia-silica fiber.

45. (new) The mat of claim 37, wherein the temperature resistant, amorphous, inorganic fiber is calcia-magnesia-silica fiber.

46. (new) The mat of claim 37, wherein the mat is substantially free of binder.

47. (new) The mat of claim 37, wherein the binder is present and comprises a silicone latex.

48. (new) The mat of claim 37, wherein the mat is formed with a binder comprising an acrylic latex which is burned out prior to operation.

49. (new) The mat of claim 37, wherein the temperature resistant, amorphous, inorganic fiber contains less than about 40% shot.

50. (new) The mat of claim 49, wherein the temperature resistant, amorphous, inorganic fiber contains less than about 30% shot.

51. (new) The mat of claim 37, wherein the mat has a basis weight of from about 1000 to about 3000 g/m<sup>2</sup>.

52. (new) The mat of claim 37, wherein the mat has an installed density of from about 0.40 to about 0.75 g/cm<sup>3</sup>.

53. (new) The mat of claim 37, wherein the mat has a nominal thickness of from about 4.5 to about 13mm.

54. (new) The mat of claim 37, wherein the mat is one of a needle punched inorganic fiber blanket, a knitted glass fabric, and a woven glass fabric.

55. (new) An exhaust gas treatment device comprising:
- a housing having an inlet at one end and an outlet at its opposite end through which exhaust gases flow;
  - a structure resiliently mounted within said housing, said structure having an outer surface and an inlet end surface at one end in communication with said inlet of said housing and an outlet end surface at its opposite end in communication with said outlet of said housing; and
  - a support element disposed between said structure and said housing, wherein said support element comprises the mat of claim 1.
56. (new) The exhaust gas treatment device according to claim 55, wherein the device is a catalytic converter for use with a turbocharged direct injection diesel engine.
57. (new) The exhaust gas treatment device according to claim 55, wherein the mat is one of a needle punched inorganic fiber blanket, a knitted glass fabric, and a woven glass fabric.
58. (new) The exhaust gas treatment device according to claim 55, wherein the mat contains a binder, which is a silicone latex.
59. (new) An exhaust gas treatment device comprising a fragile support structure within a housing, and a support element disposed between the fragile support structure and the housing, wherein said support element comprises a non-intumescent mat comprising up to about 1260°C temperature resistant, amorphous, inorganic fibers, said fibers having a Young's Modulus of less than about  $20 \times 10^6$  psi, and said mat optionally including a binder, wherein the mat is adapted to provide resistance to slippage of the support element in the housing at a force of at least about 60 times the acceleration of gravity throughout an average mat temperature from ambient temperature up to at least about 350°C, and wherein the temperature resistant, amorphous, inorganic fibers are not post processed by heat treating to either anneal or crystallize the fiber.
60. (new) The exhaust gas treatment device of claim 59, wherein the temperature resistant, amorphous, inorganic fibers have a geometric mean diameter from about 1  $\mu\text{m}$  to about 10  $\mu\text{m}$ .

61. (new) The exhaust gas treatment device of claim 60, wherein the temperature resistant, amorphous, inorganic fibers have a geometric mean diameter less than about 5  $\mu\text{m}$ .
62. (new) The exhaust gas treatment device of claim 59, wherein the temperature resistant, amorphous, inorganic fiber is at least one of an amorphous alumina/silica fiber, an alumina/silica/magnesia fiber, mineral wool, E-glass fiber, magnesia-silica fiber, and calcia-magnesia-silica fiber.
63. (new) The exhaust gas treatment device of claim 62, wherein the alumina/silica fiber comprises the fiberization product of a melt having from about 45% to about 60%  $\text{Al}_2\text{O}_3$  and about 40% to about 55%  $\text{SiO}_2$ .
64. (new) The exhaust gas treatment device of claim 63, wherein the alumina/silica fiber comprises the fiberization product of a melt having about 50%  $\text{Al}_2\text{O}_3$  and about 50%  $\text{SiO}_2$ .
65. (new) The exhaust gas treatment device of claim 62, wherein the temperature resistant, amorphous, inorganic fiber is E glass.
66. (new) The exhaust gas treatment device of claim 62, wherein the temperature resistant, amorphous, inorganic fiber is magnesia-silica fiber.
67. (new) The exhaust gas treatment device of claim 62, wherein the temperature resistant, amorphous, inorganic fiber is calcia-magnesia-silica fiber.
68. (new) The exhaust gas treatment device of claim 59, wherein the mat is substantially free of binder.
69. (new) The exhaust gas treatment device of claim 59, wherein the binder is present and comprises a silicone latex.
70. (new) The exhaust gas treatment device of claim 59, wherein the mat is formed with a binder comprising an acrylic latex which is burned out prior to operation.

71. (new) The exhaust gas treatment device of claim 59, wherein the temperature resistant, amorphous, inorganic fiber contains less than about 40% shot.

72. (new) The exhaust gas treatment device of claim 71, wherein the temperature resistant, amorphous, inorganic fiber contains less than about 30% shot.

73. (new) The exhaust gas treatment device of claim 59, wherein the mat has a basis weight of from about 1000 to about 3000 g/m<sup>2</sup>.

74. (new) The exhaust gas treatment device of claim 59, wherein the mat has an installed density of from about 0.40 to about 0.75 g/cm<sup>3</sup>.

75. (new) The exhaust gas treatment device of claim 59, wherein the mat has a nominal thickness of from about 4.5 to about 13 mm.

76. (new) The exhaust gas treatment device of claim 59, wherein the mat is one of a needle punched inorganic fiber blanket, a knitted glass fabric, and a woven glass fabric.

77. (new) The non-intumescent mat of claim 1, wherein the temperature resistant, amorphous, inorganic fibers are melt formed.

78. (new) The exhaust gas treatment device of claim 59, wherein the temperature resistant, amorphous, inorganic fibers are melt formed.

#### REMARKS

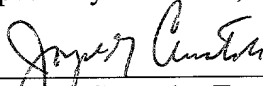
The present application is a continuation application of United States Serial No. 09/456,937, filed December 7, 1999, which claims priority under 35 U.S.C. §119(e) from United States Provisional Application No. 60/111,353, filed December 8, 1998.

Claims 1-36 were allowed in United States Serial No. 09/456,937, filed on December 7, 1999 and, therefore, have been cancelled by the present Preliminary Amendment. New claims 37-78 have been added by the present preliminary amendment. Applicants, therefore, respectfully request early and favorable consideration of claims 37-78 in the present application.

Pursuant to 37 C.F.R. §1.78(a)(2), Applicants have amended the specification to include a "Cross Reference to Related Applications" section to specifically reference the prior applications.

Should the Examiner have any questions regarding the above amendments or remarks, the undersigned attorney would welcome a telephone call.

Respectfully submitted,



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5-14-2001

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